GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, MAY 29, 1895.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLE:—The Debt of America to A. J. Downing..... 211
The Chino Valley Experiment Station.....*Charles H. Shinn.* 212
The Saguenay Region.—III.....*Rev. E. J. Hill.* 213
PLANT NOTES:—Rhododendron Vaseyii..... 214
CULTURAL DEPARTMENT:—Orchard Notes from Western New York, *Professor L. H. Bailey.* 215
Hardy Cypripediums.....*J. N. Gerard.* 216
Some Hardy Perennials.....*Robert Cameron.* 216
Some Useful Greenhouse Climbers.....*William Scott.* 216
Cyperus alternifolius.....*W. N. Craig.* 217
Native Violets.....*C. W. O.* 217
CORRESPONDENCE:—The Hardiness of Pinus palustris.....*Joseph Meehan.* 217
Notes from Wellesley.....*T. D. Hatfield.* 217
Lewisia rediviva.....*Charles H. Shinn.* 218
Taxation for Municipal Improvements.....*Luther G. Sand.* 218
RECENT PUBLICATIONS..... 218
NOTES..... 220
ILLUSTRATION:—Blood-root, Sanguinaria Canadensis, Fig. 32..... 215

The Debt of America to A. J. Downing.

WE can hardly realize that it was not until some years after the middle of the present century that any American city had begun to make provisions for a public park. New York already ranked among the world's great cities, with a population of more than half a million souls and rapidly increasing, and yet it had no grounds for public recreation, no pleasant roads for riding and driving, no opportunities for refreshing contact with natural scenery. There are half a dozen cities in the country now whose park area is measured by thousands of acres, and yet in 1851, when Mayor Kingsland, of this city, had been spurred to the point of proposing to devote as much as one hundred and sixty acres of an unpopulated portion of Manhattan Island to public use as a pleasure ground, the project was denounced by many eminent citizens of that time as extravagantly large. The change of popular sentiment between that day and this is certainly very marked, for now not only have large areas been secured in the suburbs to meet the future wants of the growing city, but our Legislature has just passed an enactment compelling the destruction of entire blocks in the most thickly peopled parts of the city in order to make space for gardens and playgrounds.

No one who has looked into the history of public parks in American cities and the development of the public sentiment which brought them into being, will deny that the strongest impulse which the movement received at the outset came from Andrew Jackson Downing. Mr. Downing was born with a strong love of nature, and as his father was a nurseryman he was brought up in a calling that increased his interest in trees and planting. Reared almost in sight of many of the old places on the Hudson which had been planned and planted by Parmentier and others of that older school, he learned while still young that a landscape could be made impressive by the simplest and most natural treatment. As he was to become our first authoritative writer on the art of landscape-gardening, the whole country has occasion to be thankful that he was in this way led to adopt what was then called the English style of gardening, in which, to quote his own words, "the spirit of nature, though softened and refined by art, always furnished the essential charm, thus distinguishing it from the French or Italian style, where one sees the effects of art slightly assisted by nature." Downing was a man of catholic views, but while he realized the fact that vases and balustrades and studied symmetry might be mingled with foliage enough to make a garden, yet his ideal garden-scene was the primeval paradise, whose pervading beauty was found in the unstudied simplicity of nature. With his natural taste refined by travel and by study, Downing's Treatise on the *Theory and Practice of Landscape-Gardening*, which was published in 1841, became at once the accepted text-book of rural art in this country, and this book, passing through many editions, and his *Rural Essays* and other works, are still classics in this branch of literature. It was his example and precept which inspired such men as Henry Winthrop Sargent, and they in turn kindled the enthusiasm of younger men, so that the best private gardens in America to-day owe what is best in them to his sound teachings.

Downing was a graceful and forcible writer as well as an artist of the highest intelligence, and as he had been already recognized as an authority a timely series of letters which he wrote for *The Horticulturist* on the subject of public parks in 1849 had a marked influence in creating and molding popular sentiment in this direction. These essays, which appeared month after month, and were widely copied by the press, marshaled in a convincing way the arguments which were then fresh and original, although many of them have since become a part of our common knowledge and belief. He began by showing that public parks were needed not only to educate the public taste, but because everybody at some time felt the necessity for this contact with nature. He showed that this communion was not only a delight to people who were as unsophisticated as children, but that the more thoughtful and educated a community became the stronger grew the passion for rural pleasures. When it was argued that the people would not visit parks, even if artistic ones were constructed, he pointed to the large cemeteries to prove how eager all classes were to avail themselves of an opportunity for a visit to anything resembling a park. Mount Auburn, Greenwood and Laurel Hill had been already established for a quarter of a century, and that they had come to be places of resort was certainly not because they afforded opportunity for solemn meditation or for the artistic value of the monuments reared within them. He truly argued that it was because they contained bits of forest-land, hills and dales, copses and glades that they attracted throngs of visitors in cities which possessed no great public gardens, and that if thirty thousand people would visit Laurel Hill in one year many times that number would visit a public park in a city like Philadelphia. He set his argument on the highest plane at the very outset, and, while recognizing the use of parks as helping to furnish air and sunshine, he held that the fostering of the love of rural beauty was quite as important an end, and that such a love of nature helped to civilize and refine national character. Mayor Kingsland's proposed park of a hundred and sixty acres he pronounced altogether too scant, and argued that five hundred acres between Thirty-ninth Street and the Harlem was the smallest space that should be reserved for the wants of the city, since no area less than this could furnish a rural landscape or offer space enough for broad reaches of park-land with a real feeling of the breadth and beauty of green fields and the perfume and freshness of nature. It was argued by some who assumed to represent the laboring classes that the park would be monopolized by those who ride in their carriages, and, on the other hand, some of the wealthy and refined people of the city complained that a park would certainly be usurped by rowdies and low people. It is refreshing now to read Downing's replies to such objections. He stoutly asserted that these social horrors were nothing but phantoms of the imagination; his faith was, as the event has proved, that

rich and poor could breathe the same atmosphere of nature and of art and enjoy the same scenery without any jealousy or any conflict.

The actual work of constructing Central Park was not begun until six years after Downing's untimely death, but it was his stirring appeals that aroused the city to feel its need, and provision to meet it quickly followed. By rare good fortune, too, designers were found, whose artistic temperament and training were akin to his own, so that our first great urban park was planned on such broad lines as he would have approved. The works which followed at once in Brooklyn, Buffalo, Chicago, San Francisco and other cities were beyond question the result of this same inspiration, so that his keen foresight and conscientious devotion to an idea were the most powerful of the agencies which united to initiate the movement which has given to American cities their thousands of acres of park-land during the past thirty-five years. When we think of the health and comfort, the rest and the refreshment, the delight to the eye and the imagination which these smiling landscapes have given and will continue forever to give to all the people, it is not too much to say that Downing takes rank among the greatest benefactors to his country which this century has produced. It is now more than forty years since he met death in trying to rescue others. Is it not time that some memorial of him should be erected in the park which his genius secured for the city? There are too many statues now in Central Park, such as they are, and it may be that a statue is not the most appropriate way of commemorating the work of such a man as Downing. But somewhere in grove or glade it is certainly possible to place a fitting memorial to one whose life was devoted to the cause of rural art. We are glad to know that this thought has occurred to more than one person lately, and that a movement is partially organized to carry it into effect. There can be little doubt that enlightened Americans will delight in an opportunity to keep green the memory of our earliest master in horticulture and landscape-art.

The Chino Valley Experiment Station.

THE large farm station which the University has established in the Chino Valley, Southern California, is situated about equidistant from three important towns, Chino, Ontario and Pomona. It is in a very prosperous region, embracing many varieties of soil, different elevations and exposures, and consequently different climates. Near the mountains the rim of the valley is largely occupied by orchards of citrus fruits. On the Chino side the leading industry is beet-culture for sugar, one of the most famous factories in the United States being located here. The total output of refined sugar last year was 9,471,672 pounds.

The experiment station occupies two pieces of land. The home tract, thirty acres in area, is near the middle of the valley, and irrigation is necessary here to secure the best results with most crops. The other tract, ten acres of moist land requiring drainage, is two miles distant, and represents quite a large extent of country. Though the home tract is more typical of the valley as a whole, some of the best sugar-beets come from the rich, moist bottoms. Both tracts, together with the water-supply needed for the larger, were given by Mr. Richard Gird, owner of the famous Rancho Chino, when the station was established.

The station orchards comprise Olives, Figs, the Citrus fruits and deciduous fruits, besides experimental vineyards of wine and table grapes, including the new Persian varieties recently introduced, and considered of especial value for warm districts. Twenty acres are now occupied by permanent plantations. The orchards and vineyards are well kept, and every tree is distinctly labeled, besides being on the record books. The large orchard book shows in the case of each tree the plat, the row, the number, the name, the source from which stock was obtained, the age when planted, and the date of planting. It then gives the records of bearing for each successive year—the date of bloom and of ripening, quality of fruit and total yield, with space for memoranda. A more complete record is kept separately for each species of fruit. The charts show every point where soil has been analyzed, or experiments tried, and the results from time to time obtained.

The orchards of various trees in this station will, in two or three years more, when trees now in nursery are set, contain upwards of twelve hundred varieties. Some kinds are represented by but one tree, but others require several specimens so as to make more careful tests, or because they are on somewhat different soils.

The University has already under cultivation at its stations 240 varieties of Apples, including Crabs; 25 varieties of Almonds; 45 varieties of Apricots; 75 varieties of Cherries; 70 varieties of Figs; 20 varieties of Nectarines; 250 varieties of Peaches; 175 varieties of Pears; 120 varieties of Plums and Prunes; 20 varieties of Walnuts and 30 varieties of Citrus fruits, besides Persimmons, Mulberries and many other fruit-bearing trees.

Everybody who has attempted to establish an experimental orchard knows that after the first hundred or so varieties are obtained the task of selection becomes one of increasing difficulty. The plan at the Southern California station is to secure standard varieties for comparison, and promising seedlings from the Pacific coast, the southern states, Europe, Australia, Japan, and other regions with similar climates, discarding or sending to another station those varieties that prove inferior here, unless some other characteristic renders them useful for hybridizing. Georgia, Alabama and other southern states have contributed some of the most valuable seedling Peaches, not only for cultivation, but as parents of new varieties. The Chinese Flat Peaches, so useful in Florida, have never been popular in California. The Chinese Cling type is considered very desirable in some regions. The Chino Valley seems particularly well adapted to the Almond, Prune, Peach, Apricot, Olive and Orange, and less suited to the Cherry, Apple and Pear, although fair results are expected with the latter fruits in certain localities.

A brief synopsis of the work accomplished at this station since its formation will serve to illustrate some of the local advantages. July 14th, 1890, Professor Hilgard chose the site, reporting that the thirty acres consisted of reddish mesa soil and gray gravelly soil, the former predominating. The moist land tract was a dark, rich loam. About the end of November, 1890, the University took charge of the station, a house and barn having been meanwhile built, and water secured through a three-inch cement pipe.

February 19th, 1891, orchard-planting was begun, the land by this time being cleared, graded and plowed. Owing to heavy rains and an unusual overflow from the adjacent wash, or winter channel of one of the numerous creeks, planting was not completed until the middle of April, fully a month later than is desirable. About 800 fruit-trees, representing 365 varieties, were set in orchard form; seventy-five varieties of Grapes were planted in the vineyard; ten named varieties of Date Palms, and many other rare trees were also secured, and a nursery was commenced. The culture plots included the leading cereals, Sorghums, forage-plants, etc.

During the summer of 1891 a circular reservoir of cement, containing 100,000 gallons of water, was constructed on the highest point of the thirty-acre tract. The streets surrounding the land on two sides were graded, and the following winter choice shade-trees were planted around the entire tract. The orchard and vineyard were enlarged and a collection of some twenty species of Vitis was added.

During the summer of 1892 a small greenhouse was built and the offices considerably enlarged. The deciduous fruits received no irrigation; the Citrus fruits were watered three times during the summer. Peruvian Cotton, five varieties of true Sugar-cane, Cassava, Tobacco and a large collection of varieties of Sweet Potatoes were grown this year. Some of the Grapevines planted in 1891 bore fruit.

In 1893 further additions were made to orchard and vineyard. The older vineyard bore well, and so did some of the Peaches, Almonds, Cherries, Plums and Apricots. Four varieties of Orange-trees planted in the summer of 1891 bore five or six fruits apiece. Twenty varieties of Sweet Potatoes were grown, and were analyzed at the Central Station. Collections of small fruits were commenced.

In 1894 the fruit crop was large. Nearly all the Olives, Peaches, Oranges, Lemons, Almonds, Plums and Prunes, Apricots, Figs and Cherries yielded more or less liberally. Some of the Apples and Pears also bore to some extent. Small fruits were very abundant. During the winter of 1894–95 an orchard of special fruits on selected stocks was commenced on ten acres of moist land.

Extensive experiments with Sugar Beet culture were carried on each year on a larger scale. In 1894 about five acres were devoted to this crop. Many successive plantings on different soils, using all the leading varieties of seed and analyzing both soil and beets as often as deemed necessary, led to results, considered locally, of prime importance to the beet-sugar industry of the Chino Valley. These experiments are being continued on a still larger scale the present season. A small chemical laboratory has now been fitted up for the foreman, who is competent to make the simpler analyses on the ground.

But a little more than four years has elapsed since the first planting was done at this station. The visitor now sees orchards and vineyards in bearing, a garden of Roses, shrubs and various flowers, a small arboretum of choice ornamental trees, extensive culture-plots, varying from year to year; and, in brief, the materials in readiness for much experimentation. This has been accomplished in four years by the toil of one foreman, who has had one laborer the whole time, and a second man only about nine months in the year. It is a record of which the University may well be proud.

Niles, Calif. *Charles H. Shinn.*

The Saguenay Region.—III.

POTENTILLA TRIDENTATA, a low plant with smooth, evergreen leaves, covered dry rocks where a thin coating of soil gave its woody roots a chance to grow, and still showed some of its white flowers near the end of August. Potentilla Anserina crept about in the low, sandy ground at the mouths of streams which entered the bay, and Ranunculus Cymbalaria, with its small, round leaves and spreading stems, covered wettish or muddy spots in similar localities. In the moist, grassy land, near the mouth of Mars River, our wild Forget-me-not, Myosotis laxa, grew, and some sprays of M. versicolor, a low hairy plant, resembling M. verna, but with yellow flowers, changing to blue or violet, were taken from waste ground in the streets of Chicontimi, where it had been introduced. Two small annuals of the Figwort family, Euphrasia officinalis, Eyebright, and Rhinanthus Cristi-galli, the Yellow Rattle, were common in rocky fields and on grassy slopes, the tiny bluish flowers of the former exceedingly pretty when peeping out from the low grass of lawns and pastures, the latter rather stiff and homely with its conspicuous, inflated pods. From dry rocks at "Cross Point," near the mouth of the Saguenay, were gathered some specimens of a Whitlow Grass, Draba incana, var. arabisans. Its floral season had passed some time before, but the tufted branches near the root, well provided with small oblanceolate leaves, hoary with stellate hairs, gave interest to it. From the same rocks, near the water's edge, were plucked the handsome flowers of the Beach Pea, Lathyrus maritimus, a very common plant along the sandy shores of the Great Lakes. Near by, on wet rocks or by the banks of brooks, grew the Hemlock Parsley, Conoselinum Canadense, the tallest stems, with their finely cut compound leaves, making of it an attractive plant.

Marine plants were quite abundant, for the tide sweeps up the Saguenay, rising to more than twenty feet at the head of Ha-ha Bay, rushing into the coves and covering many of the low-lying rocks, and bringing in brackish water. In the tide-swept mud along the shore were Tissa marina and Plantago maritima. The latter was very variable in size and appearance, growing also in the crevices of rocks wet by the tide. Here it might be but two or three inches high, with cylindrical leaves, scarcely thicker than a needle, but when growing in the clays the leaves might be half an inch wide and half a foot or more in length. The Sea Milkwort, Glaux maritima, grew upon the wet rocks and sands at Tadousac, and close by tide-water, near the mouth of the Saguenay, the Scotch Lorage, Ligusticum Scoticum, was found. Solidago sempervirens grew in various places by the river. It has thick smooth leaves and showy heads with golden-yellow rays, characteristics which bring it into prominence as it stands on the wet rocks or slopes, usually close to tide-water. Atriplex hastata was met with along the river and in waste ground at Chicontimi, for it is weedy in its habits. It is, in consequence, not restricted to marine conditions, but has become an abundant weed in the salt regions of western New York, and is common about the Great Lakes, even spreading away from them along the road-beds of railroads.

The Compositæ were quite well represented. Among the more interesting was Aster macrophyllus, in the open woods or along their borders; A. acuminatus on the shaded slopes, generally poorly furnished with flowers, the stems sometimes bearing but one or two heads. A. tardiflorus, a low plant with pale violet rays, appeared occasionally in the damp soil of shady places. A. umbellatus was one of the most common Asters in the damp thickets or along the streams. A. Novi-Belgii grew upon the wet rocks, its medium-sized heads, with rays of bright violet-blue, making it an attractive species. A form of Erigeron Canadense, about a foot high, covered with pink or pinkish flowers, made a pretty plant and caused its weediness to be overlooked. A few were seen in the gravelly deposits at the mouth of Mars River. It reminded one of a similar deviation from the normal form of the common Milfoil, occasionally found in the wild state, and which has obtained a place in the flower-garden, where the white flowers have given way to those with rose-colored rays. With its fine sprays of flowers the Butterweed was almost as neat a plant florally, and did not seem a greater variation from the type.

One of the most interesting Golden-rods was Solidago bicolor, with its whitish or cream-colored rays, and growing mostly on the rocks. Though generally grayish, with short pubescence, when in the shade of cliffs or under evergreens, it became quite smooth in the variety concolor and had very green leaves with a surface almost shining. S. lanceolata, when on the rocks, had thick leaves, with somewhat the same shining, evergreen appearance. Sometimes it would be much dwarfed, and but five or six inches high in such situations. Among the Pines on the higher ground and ridges, the mountain species, S. macrophylla, was seen. It has a wand-like stem and showy heads, which are large for a Golden-rod. The bright green leaves were not at all remarkable for size, as its name might indicate. S. uliginosa, a species with larger leaves, found a congenial place on the wet rocks, though oftener seen in sphagnous swamps. S. juncea and a slightly hoary or minutely puberulent form of S. humilis were taken from rocks on the banks of the St. Lawrence at Tadousac. The latter strongly reminded one of S. puberula. Two of the Hawkweeds, Hieracium scabrum and H. Canadense, were on the common Pine plains and gravelly banks. Prenanthes altissima was a frequent plant by the margins of woods and in rocky ground, with a great variability in the shape of its leaves and in height of its stems. P. serpentaria, with much thicker and less variable leaves, grew very abundantly in the sandy ground at Tadousac.

Some of the introduced plants proved of interest, especially the weeds with which I was less familiar at home. Thlaspi arvense, the Mithridate Mustard, or Pennycress, was sparingly found at St. Alphonse, its broadly

winged flat pods suggesting a greatly enlarged fruit of the Shepherd's-purse, and quite pretty in their way. The Bugloss, Lycopsis arvensis, a small, but very rough, hairy plant, was occasionally seen in the dry fields. In the grain-fields were the Corn Spurry, Spergula arvensis, and Sonchus arvensis, the large heads of the latter, with glandular bristly involucre and bright golden-yellow rays, being rather handsome. As it sprang up in the Oat-fields, which had apparently been plowed over in the spring, it had all the appearance of an annual, or, at least, of a plant fruiting the first season from the seed. This also seemed evident from an examination of the root, which was not a creeping root-stock, but with the main axis vertical and with smaller branches, as in the roots of the more common Sow Thistles. Of Vetches I noticed Vicia sativa and V. hirsuta in the Wheat-fields or mixed with the Pea-vines, while along the field-borders and in the fence-rows was the native Vetch, Neracca. Though mostly weeds, and somewhat troublesome, the neat pinnate leaves and bright flowers of purple or blue make handsome plants of these Vetches. The little Hop Clover, Trifolium procumbens, abounded in the dry fields and meadows. Euphorbia Peplus frequently appeared as a weed in waste ground. In such places the Mugwort, Artemisia vulgaris, was very common, as well as the widely disseminated Ranunculus acris. The Bladder Campion, Silene cucubulus, grew up in the field-borders, and when among bushes became very slender and three feet tall sometimes. The flowers generally perfected but five stamens, the five remaining ones attaining but half the usual length, or appearing as short rudimentary stubs at the base of the calyx-tube. The Abbé Provancher, in his *Flore Canadienne*, perhaps alludes to a more extreme case of this barrenness, stating that the flowers are sometimes subdiœcious.

Chicago, Ill. *E. J. Hill.*

Plant Notes.

Rhododendron Vaseyii.

THE attention of our readers has often been called to the value of this Carolina plant in northern gardens, and on page 377 of the first volume of Garden and Forest a figure of it was published. Its hardiness has now been satisfactorily demonstrated in the neighborhood of Boston during the past winter, which has been one of the most severe on plants that has been experienced in the last quarter of a century, killing the flower-buds of most varieties of the so-called Ghent Azaleas, in which are mingled the tender Pontic Azalea and some of the American species. So severe have the effects of the winter been that many old plants of the Ghent Azaleas have been killed to the ground; the evergreen Rhododendrons have suffered seriously and the Japanese Retinosporas and other conifers are killed or badly mutilated. Rhododendron Vaseyii, however, is blooming better than ever and the pure pink flowers are delightful. It is not an evergreen species, and, like the Rhodora, to which it is more closely related than to any other American plant, it loses its leaves in the autumn and does not regain them until May, after the flowers begin to fade. Although in its mountain home Rhododendron Vaseyii sometimes grows to the height of eighteen feet, in cultivation it begins to flower when less than a foot high, and as the flowers open with those of the Poets' Narcissus it is suggested that a good combination could be made by planting a mass of this Rhododendron and then filling up the place between the plants with the Poets' Narcissus. The perfect clear pink of the Rhododendron flowers combine perfectly with those of the Narcissus, and both plants enjoy moist and not too well-drained soil.

Our readers will remember that Rhododendron Vaseyii is one of the last of the conspicuous plants discovered in eastern America, and that it was not until 1878 that Mr. George R. Vasey found it near Webster, in Jackson County, North Carolina. Subsequently it was detected in Cashiers' Valley, in South Carolina, and still later on the slopes of Grandfather Mountain, in North Carolina. Among the plants of its class none surpass it in beauty, hardiness and the ability to flower profusely year after year, and when better known it will, doubtless, become a general favorite.

The Ghent Azaleas are certainly very beautiful, but many of them are not hardy, and those which are able to bear the New England climate often lose their flower-buds in severe winters. The species of eastern America will, therefore, be found more satisfactory for general planting in our severe climate; their flowers cannot boast, it is true, the range of colors that have been obtained in the more delicate hybrids, but the hardiness of the plants compensate for this; and by selection and hybridization between the eastern American species a race may be produced free of the Pontic strain, which has weakened the constitution of the Ghent breed. English raisers of Azaleas have been using of late years the California Rhododendron (Azalea) occidentale to cross with the Ghent Azaleas. It is a very beautiful white-flowered species, and some of their new hybrids are very handsome, but Rhododendron occidentale is, unfortunately, tender in our climate, and the crosses from it will not probably be very satisfactory here.

Caragana arborescens.—This Siberian Pea-tree is now in bloom in the parks of this city, and its bright yellow flowers appearing among the light green downy leaves make it really attractive. These flowers are often said to resemble those of the Laburnum, but really the flowers of the Laburnum, as they appear in long graceful racemes in England and other places where the climate suits the tree, are much handsomer. The Laburnum, however, does not thrive in this country except in a few favored locations, while the Caragana, by its perfect hardiness and its adaptability to all sorts of soils, is a plant that we can always depend upon. It sometimes reaches a height of twenty feet and assumes a genuine tree shape; it will bloom when it is only three or four feet high, and it has a special value in that it produces flowers of a color which is comparatively rare at this season. These Pea-trees, for there are a number of species and varieties in cultivation, belong to the Leguminosæ, and, with the exception of the Red Buds, they are the earliest of the family to flower.

Sanguinaria Canadensis.—The Blood-root is among the most attractive of our early-flowering plants, and although the petals fall quickly, when growing in a mass, as it is usually found in nature, fresh flowers continue to appear for several days. These are white, star-shaped and solitary, with a yellow centre. The flower-bud comes out of the ground from the thick root-stock with the leaf wrapped snugly about it. As soon as the leaf opens the scape lengthens, so that the flower is lifted well above the kidney-shaped leaves. These continue to expand after the flowers are past and reach considerable size, so that a mass of them is highly ornamental. The plant thrives in a well-drained soil, but it needs moisture, with some shade, and it does best where it can revel in peat and leaf-mold. It is easily cultivated when these conditions are supplied, and, as Mr. Horsford has pointed out, it does better when planted in clumps of at least six to ten roots, perhaps because the broad leaves shade the ground and keep it cool. When growing wild it is oftenest found in fence corners and similar places where the dead leaves are swept together by the wind, no doubt because mulch of this sort is so effective in keeping the soil damp and cool, as well as furnishing the kind of food in which it delights. The plant derives its name from the orange-red juice which exudes from its root-stock, and to some extent from the flower-stem when cut or bruised. The photograph of a little group of these flowers, which is reproduced on page 215, was taken by Miss Edith Eliot, of New Bedford, Massachusetts.

Alyssum saxatile.—This old plant, which has been cultivated for more than a century, makes a very pleasing display just now. It is an excellent subject for the rock garden, and never shows better than it does when its pros-

trate stems are hanging over stone ledges. In a slightly elevated position it thrives the best, for it resents water about the roots in winter. The flowers are fragrant, of a golden-yellow color, and are borne thickly in panicles at the ends of the stems. It is rather shrubby at the base, and rarely grows more than a foot tall. Although it gives the best results in an elevated position, nevertheless it makes a good border-plant in a sunny place when the soil is well drained. It is easily raised from seed. Seed sown in March make large plants by the fall.

ARTHROPODIUM CIRRHATUM.—This is an interesting and attractive greenhouse herbaceous perennial which flowers at this season. It is a New Zealand Liliaceous plant with partly folded grass-like leaves, some two inches broad and eighteen inches long. These leaves are gracefully curved and radical. The flowers are borne in loose racemes on jointed stems well above the foliage. The flowers individually are pure white, with prominent yellow stamens, about three-quarters of an inch in diameter, and the white petals are well reflexed. They endure for several weeks, and the plant is ornamental either with or without them. It offers no difficulties in cultivation, growing strongly in sandy loam in a greenhouse temperature. It is increased by seeds, division and offsets.

IRIS KOCHII.—Among the large early-flowering bearded Irises this stands distinct among the many purple kinds now in bloom. The large flowers are of a peculiarly rich dark vinous-purple color, which is very effective and striking. Besides the typical I. Germanica there are a number of hybrids in the same section with various shades of purple, but none more effective than this Istrian species.

Fig. 32.—Blood-root, Sanguinaria Canadensis.—See page 214.

Cultural Department.

Orchard Notes from Western New York.

NEVER before has there been so much interest in spraying orchards, and in the best parts of the fruit sections of western New York nearly all the fruit-growers will spray their trees. The people have now had sufficient experience in the operation to ask most explicit questions about every detail. In the Apple districts of Wayne, Ontario, Monroe, Orleans and Niagara Counties, it is no longer necessary to exhort the fruit-growers to adopt the practice, for they are already convinced and are now chiefly concerned in perfecting the methods and appliances.

Spraying with Paris green for the Codlin-moth has been an established practice for three or four years, but it was not until last year that the application of Bordeaux mixture for the scab fungus was extensively tried by apple-growers. Many of these experiments with the fungicide were remarkably successful, and they have had a noticeable effect upon the operations this spring. Few persons are now spraying orchards with Paris green alone, but they are combining the poison with the fungicide, and thousands of acres of orchards are being treated with this combination.

For the most part these applications are well made, and the growers are willing to repeat them two or three times. Yet I am more and more convinced that still greater thoroughness is the secret of ultimate success. The Bordeaux combination adheres to the twigs and foliage for weeks, and I am sure that one thorough application of it is more efficacious than two or three carelessly made. This has been well illustrated in some experiments which I have just made on a large scale for the destruction of the Canker-worm in an orchard in Orleans County. It is well known to experimenters that this rapacious insect is readily killed with Paris green, and yet the greater part of the most painstaking orchardists of western New York who have had experience with it have failed to completely rout it by spraying. Some persons have even used a mixture of Paris green as strong as one pound to forty gallons of water, with indifferent success. The trouble is that the insect appears suddenly in great numbers and eats voraciously. The treatment which is needed, therefore, is not one of great strength, but one of great thoroughness, so that every portion of the foliage may be coated with the poison. The worms must be killed quickly, before they have eaten far, for five or six of these greedy creatures soon dispatch a leaf. On trees where the worms would average this number to every leaf we were able to destroy them all with two applications of a pound of Paris green to 200 gallons of water, and in some cases even a single spray was sufficient. But this spray was liberal and thorough. On old trees we applied as much as six gallons to each tree, while growers in general were using from one to two gallons of a twice or thrice stronger mixture with poor results.

Another remarkable feature of the present spring in the Apple regions is the great number of orchards which have been plowed up and put under clean culture. The repeated failures of the apple crop in recent years have now thoroughly aroused the growers of western New York. For a time they waited, hoping for productive years, as of old; but the crops did not come, and now an effort is making to bring the crops. I doubt if the experiment of reviving old Apple-orchards by tillage was ever tried on such a gigantic scale as it is now being tried in western New York. In the meantime it is gratifying to know that the rural population is at last ready to accept the teachings of investigators quickly and fully.

Cornell University. *L. H. Bailey.*

Hardy Cypripediums.

OUR native Cypripediums, while not rare plants, are yet uncommon in cultivation. Few hardy plants are more interesting, and, judging from the number of common names given to them, the interest is not confined to gardeners. The general name, Lady's Slipper, is a contraction of Our Lady's Slipper—that is, the Blessed Virgin's. C. pubescens is also known as Moccasin flower or root, Nervine, Nerve-root, Water Nerve-root, Umbil-root, Noah's Ark, Indian Shoe, Bleeding Heart, American Valerian, Pine Tulip, Money-flower, Slipper-root, Venus' Cup and Venus' Shoe, Yellows. By the Indians it was called the Night Hawk's Shoe (pishko-ta hâpe.—Dakota), Rabbit's Shoe (tchukfi i-shulush.—Choctaw), Whippoorwill's Shoe (kwikohia-otakwa.—Onadaga). These names have also been applied to the other species. In addition, the Cherokee Indians know C. parviflorum as the Partridge Shoe (Kkwe ulas âla), and C. acaule is known as Old Goose, and C. arietinum means Ram's Head Lady's Slipper.

The Cypripediums are among the popular simples, being a gentle nervous stimulant or antispasmodic, used for the same purposes as Valerian-root, Valeriana officinalis. It has been claimed that C. spectabile and C. acaule have narcotic principles. C. pubescens is the only one named as officinal, however. It is not possible to discover the annual consumption of the root within a number of tons. Its use has been decreasing in recent years in competition with English valerian.

As garden-plants Cypripediums are apt to be short-lived unless one can manage to secure the rather difficult conditions of rich moist soil in shade and nutriment in the way of decaying vegetation on which they revel. However, if well-formed crowns are secured in the fall the plants will do well for a while under trying conditions. C. parviflorum has grown very well in my garden in heavy soil, with a northern exposure, under the shade of a Pear-tree. Just now C. pubescens and C. spectabile, sent by Mr. Mann from a Tamarack-swamp in Wisconsin, are as vigorous and sightly as one could wish. It is very probable that sphagnum would prove a very successful medium in which to grow these plants in our gardens, taking care to give an occasional dressing of rotted leaves. They are readily forced by planting in pots or flats, which should be kept in the frames and brought into temperate warmth early in the year.

Aside from the interest in growing these wildlings successfully, they seem to me to be among the plants more thoroughly enjoyed if sought out and discovered in their haunts while they are in flower.

Elizabeth, N. J. *J. N. Gerard.*

Some Hardy Perennials.

Fritil'arias.—The different species and varieties of Fritillarias add much to the attractiveness of the spring garden, and it is a mystery why plants so easily grown are not more common. The stately Crown Imperial, in its many varieties, is most frequently seen, and it is the most conspicuous plant in the genus. When well grown its stout leafy stems attain a height of four feet. Its drooping flowers are nearly as large as Tulip-flowers, and they vary in color from yellow to crimson. The flowers are produced in whorls at the top of the leafy stem, which are surrounded by a crown of foliage. The varieties of this plant are numerous, but there are two forms with variegated foliage. One has silver-striped leaves, and the other has gold-edged leaves. The Crown Imperial is not particular about soil, but does best in a light sandy loam well enriched with manure, and a slightly shaded position suits it well.

Fritillaria Meleagris, the Guinea-hen-flower, is a pretty European species, and it has many showy varieties. It does not grow as large as the above species; the stems only attain the height of one foot. The pendulous flowers are produced singly on the top of the stem, and are checkered with pale and dark purple. The white variety of this plant is very pretty, and well worth growing. F. obliqua is a neat and distinct plant from the Caucasus. The stems, which are about a foot high, are clothed with numerous oblique glaucous leaves, and its flowers are brown-purple. F. ruthenica is another good dwarf species that is perfectly hardy. Its flowers are brown and yellow, and it is about a foot high, with linear lanceolate leaves.

The dwarf kinds are excellent plants for sunny borders, and when set in small groups they are very pleasing. The bulbs when once established should not be disturbed often, and when they are transplanted at any time they should not be kept out of the ground long, as it weakens the plants. The bulbs of Fritillarias should be bought early in the season, August or September, and when once procured there should be no delay in getting them into their permanent positions. Large bulbs should be planted six or eight inches deep, and the smaller kinds from four to six inches deep. Care should be taken not to put the bulbs where water will settle around them in winter.

Anemones.—A beautiful little plant is Anemone sylvestris, with its pure white drooping flowers. When nicely grown it has a neat habit, the three-parted leaves spread out and touch the ground and grow up around the flower-stems in a pleasing manner. When it is in flower the plant measures from twelve to fifteen inches in height. It comes from Siberia and central Europe, and is quite hardy here. A light rich soil in a slightly shaded place seems to suit it. A. nemorosa, var. Robinsonia, when it once gets the right situation and feels at home, is the most beautiful of the Wind flowers. It must be seen on a bright sunny day with all its flowers open, for, under any other conditions, its full beauty is not displayed. The habit of the plant differs little from that of our native A. nemorosa, but its flowers are much larger and of a bright sky-blue. It is a British plant, but grows luxuriantly here, and does well in a light rich soil, and a slightly shaded position prolongs the flowering season.

Orobus vernus.—Plants with pea-shaped flowers are rare at this season, and this fact alone would give a value to this Orobus. It is an excellent hardy perennial, and would deserve attention at any season. The plant grows about a foot high, and nearly as soon as the growths are out of the ground the flowers begin to appear. At first they are a mixture of green, red, purple and blue, but when they get a little older they turn almost blue. This is a good border-plant when it has good rich soil.

Saxifraga peltata.—At the edge of a small pond this largest of the Saxifrages is throwing up its vigorous flower-stems. These stems, which rise from a stout, fleshy, creeping root-stock, are from eighteen inches to two feet high and three-fourths of an inch thick at the base. The flowers are in large clusters and rose-colored. At this time, when the plant is in bloom, the leaves are about ten inches high and six inches across. Later on the umbrella-shaped leaves increase in every way until they are about a yard high and as much across, and are very bold and handsome. It is a môisture-loving plant, and requires to be planted near a pond or running stream; in such a place it very soon increases.

Harvard Botanic Garden. *Robert Cameron.*

Some Useful Greenhouse Climbers.

Hoya carnosa.—This fine old climber still holds its own against the newer introductions. Few, if any, of its rivals are more pleasing in flower and foliage, and certainly none are more suitable for covering a back wall. The plant requires a fair share of light, and with ordinary care it will make rapid growth and soon form a spreading mass of glossy green leaves. It commences flowering in March or April and blooms profusely for several weeks, while occasional blooms appear during the entire summer. The peculiar texture of its sweet-scented flowers has given it the popular name of Wax plant. They are rather unsuitable for cutting purposes, as they are hard to procure with any length of stem, though shoots four or five feet in length may be cut with several clusters of flowers attached. The plant requires plenty of root room, and, therefore, does best in a bed, which should be freely drained. A compost of turfy loam, well-rotted manure and a little sand suits it well. It requires an abundance of water while in active growth, but should be kept rather dry during the winter months. A trellis of wood-work or wires should be provided for support to which the shoots should be tied until the plant is well established, after which they will cling readily of themselves and require only an occasional trimming to prevent overcrowding. This trimming is best done after the main crop of flowers is past, when the plant will make and ripen the young wood for another season's flowering, the greater part of the flowers being procured from the young wood. Shading is necessary during the summer months, as the leaves are easily scorched in strong sunshine. Fine specimens of the Wax plant are often seen in old country houses, where they have been grown for years in a large pot. They are taken in the house in any warm corner for the winter, and in summer are set on the porch, or under a tree where they will bloom abundantly with no other attention than a watering every day or so.

Lapageria rosea.—This plant and its variety, alba, would be more common if they were not so difficult to establish. Many failures undoubtedly occur because the potting compost is too stiff or heavy. Peat soil or leaf-mold should constitute about half, the other half being made up of good turfy loam and a plentiful dash of sharp sand. It is hard to give too much

water while the plants are in active growth, providing the drainage is good. They suffer if allowed to become dry during the warm weather, and even in winter should be kept moderately moist, the amount of water given being regulated according to the atmospheric moisture of the house. The flowers are useful for wreaths and similar purposes. Nowhere do the large waxy, bell-shaped flowers show to better advantage than when drooping from the roof of the greenhouse, for which this plant is admirably adapted. It is of slender growth and light foliage and does not obstruct the light from the plants below.

Stigmaphyllum ciliatum.—This plant is well adapted for a similar purpose, but is of more rapid growth and heavier foliage. It is of comparatively easy culture and thrives well in a light soil. The flowers, which are produced in panicles, are of a bright yellow color and very showy. They are easily damaged by damp, and on this account the plants should not be syringed when in flower.

Habrothamnus elegans.—This is another old-time favorite. It is especially useful for training to a pillar from which the graceful drooping panicles of bright carmine flowers are displayed to the best advantage. It can be had in bloom during the winter months if it is well cut in about the end of September. There need be no fear of cutting it in hard, as it starts very readily and may be pruned back as close as a grapevine.

Tarrytown, N. Y. *William Scott.*

Cyperus alternifolius.—For decorative purposes this is an extremely useful plant, and for growing in Wardian cases, aquariums or positions where it can have plenty of moisture and not too much sunshine it is unexcelled. Planted in the open ground it makes a very handsome appearance, and it succeeds in either the full sun or a heavily shaded situation. It succeeds best where slightly shaded, and last year grew four to five feet high and three feet in diameter. Those who have some old, rather sickly-looking specimens in pots should plant them out, and they will be surprised to note a fine tropical appearance they will have ere the season is over. The variegated form, C. alternifolius variegatus, grows less vigorously with us than the green form, but makes a very pretty plant. As young plants are so easily raised from seed and otherwise, it is not advisable to dig up any plants in the fall; they are sure to lose a large part of their foliage after lifting.

Taunton, Mass. *W. N. Craig.*

Native Violets.—Under cultivation these plants make a rather pretty display of flowers and foliage. Some of them, however, are apt to become troublesome weeds if planted where the hoe cannot be used freely. The principal offender in this line is Viola cucullata, which goes on producing short-stemmed apetalous flowers all through the summer, and these flowers are very abundant seed-producers. V. blanda is a good species with white flowers and lots of them; it is about six inches high. V. Canadensis is a beautiful plant, with leafy stems, and grows over a foot high; it has also white flowers, tinged with violet. V. pedata has several forms, every one of which is beautiful. V. pubescens has small yellow flowers and very handsome foliage. V. sagittata has very variable foliage and pale purple flowers; in masses this looks well. These Violets seem to prefer a heavy loam with the addition of some vegetable mold. V. pedata, in its varied forms, usually grows on hard-baked sandy soil, or gravelly soil, and in such situations flowers sparingly all summer long if there are abundant rains, but usually the plants show best in May and late September.

Botanic Garden, Washington. *G. W. O.*

Correspondence.

The Hardiness of Pinus palustris.

To the Editor of GARDEN AND FOREST:

Sir,—The note on the hardiness of the Cherokee Rose in a recent number of GARDEN AND FOREST leads me to ask what has been done in the way of testing the hardiness of the Pinus palustris? Two years ago we procured a dozen small plants of this species from a point near its northern limit in North Carolina. One only survived the transportation, but this one has lived through the past two winters here with no protection. Even the severe one just past has not materially hurt it. The uppermost leaves are brown and dead, but the lower ones are green. Further than this it is now making a vigorous growth from the crown. The plant is only about fifteen inches high, and it was under the snow part of the time, but there were terms of very severe weather when it was entirely uncovered.

Germantown, Pa. *Joseph Meehan.*

[The condition of the plant of this Pine, which has been growing for many years in the grounds of the Department of Agriculture in Washington, shows that, while it can be kept alive there, it has no ornamental or economic value much beyond the limits of its natural range.—ED.]

Notes from Wellesley.

To the Editor of GARDEN AND FOREST:

Sir,—Mr. H. H. Hunnewell's grounds are open to the public and they are visited by thousands of plant-lovers every season. The superb collection of rare and beautiful conifers and splendid specimens of rare trees and shrubs from all parts of the world are the main attraction to some of the visitors, while others come to see Lake Waban as it appears when looking over the Italian garden of trimmed trees, the finest in the United States. The exhibition of Rhododendrons and Azaleas in June is a special treat to many persons. Mr. Hunnewell has a magnificent collection of Rhododendrons. It may be a question whether the more tender kinds, in which Asiatic blood predominates, will ever be really hardy here. Mr. Hunnewell has, by extreme care in regard to suitable location, and attention to watering during dry weather, succeeded in retaining some of the tender ones in excellent health. Years ago crimson shades were rare, now there are several good varieties of this color.

During the late summer the English flower-garden proves a great attraction. It is a flower picture, a mass of color, effectively arranged in one part of the garden shut in by a rectangular evergreen hedge. The Water-lily tank, heated by hot-water pipes, and containing such tender kinds as Nymphæa Devoniensis, N. Zanzibarensis and N. stellata, as well as some of the handsomer of the hardier kinds, notably N. chromatella, has many admirers. A special bed of Japanese Iris is provided with water-pipes, laid so that it can be overflowed during the blooming season—an essential condition to the proper cultivation of these plants. A canopy is spread over them to protect the delicate and many-hued flowers from the scorching rays of the sun.

The conservatory is considered private, but no one is ever refused permission to view the splendid collection of Orchids always on exhibition there. Mr. Hunnewell's Orchids are selected mainly for spring and summer effect. There is just now an immense basket—crate, one might call it—of Cattleya Skinneri, and another of its charming white-eyed variety, oculata. The brilliant violet-purple of these flowers is very effective. With its fragrant, lemon-yellow, pendent flowers, C. citrina is here exceptionally well grown. Lælia cinnabarina and Ada aurantiaca give the touch of orange-scarlet needed. Dendrobium nobile, in many fine forms, and D. Wardianum are indispensable here, as elsewhere. Other Dendrobiums in flower are D. fimbriatum, orange-yellow, with dark brown, almost maroon, eye, and fringed lip; D. Brymerianum, clear yellow, with a still more fringed lip, and D. thyrsiflorum. These add variety and beauty to an attractive group. Schomburgkia Tibicanis is a rare and most interesting Orchid, very seldom seen. The plant now in flower bloomed two years ago for the first time in this country. It is a somewhat coarse grower, producing but few flowers in proportion to the size of the plant. They are pink and white and finely penciled.

In the annex to the conservatory, which is open to the public, there is a fine display of spring-flowering plants. It is interesting to note how effective such old plants as Antirrhinums are for grouping. There are some finely selected kinds, one of wine-purple being very showy. Another effective striped one, Mr. Harris says, he used to know many years ago as Caryophylloides. Azaleas are here used to help the display, although there is a special exhibit of these plants in pots plunged to the rim in a tent in another part of the grounds. A. orbicularis is a variety especially worthy of note; it is a Japanese species, and very nearly hardy. The flowers are small, red and white striped, but produced in immense numbers. This species is being used largely in England for forcing. It suffers in comparison with a well-grown plant of tenderer, larger-flowered kinds, but its hardiness makes it much easier to handle, for which reason it is especially well suited for florists' use. A fine standard Wistaria Sinensis, Lilies and foliage-plants make grouping for the background, while in front there is a blaze of Pelargoniums such as one seldom sees. Among the best Zonal kinds are Clyde, vermilion-red; Fiery Cross, intense crimson; Belle Poitevine, salmon-pink, and the White Nemesis. Show Pelargoniums are in the majority. The collection contains some extra good varieties. Duchess of Albany is a fine dark-flowered sort; Duchess of Teck, large, white, faintly tinted pink, chaste and beautiful; Albino, white, with a light purple standard; Kingston Beauty, with a deep purple stand-

ard; Lizzie Cannell, the handsomest of all dark ones, with edges white and crimped; Madame Thibaut, another crimped kind, delicately blotched and penciled with rose and white, with crimped petals, and the handsomest of its color; Beacon, one of the showiest—its standard petals are very deeply blotched; Ophelia, a rosy purple, and very distinct, the most striking one of the group. The old Pelargonium Rollissoni must have a word. It is a distinct-looking species, with crimped, woolly and odorous foliage and a multitude of handsome umbellate corymbs of small rosy purple flowers. Show Pelargoniums, when out of bloom, should be ripened well by withholding water to some extent. In autumn Mr. Harris stores his plants in a cool light place where they are kept dry. In midwinter they should be pruned into shape, potted and started into a slow but substantial growth for spring-flowering. The same plants may be submitted to this treatment for several years.

Wellesley, Mass. *T. D. Hatfield.*

Lewisia rediviva.

To the Editor of Garden and Forest:

Sir,—I have just returned from a visit to the experiment station near Paso Robles, where I was interested at finding a small colony of the beautiful Lewisia rediviva. It grows on the high valley land or rolling plain, about two miles east of the Salinas River, at an elevation of eight or nine hundred feet above the sea. The soil is a hard clay and rather sterile, and the plant has not been seen anywhere else in that region. I am not aware that the Lewisia has before been reported south of Monte Diablo in the valleys of California, but I may be mistaken in this, as I am not familiar with its literature, and, indeed, took the plant to Professor Greene for identification. It interested the Botanical Department of the University exceedingly, as it is really a plant belonging to the mountains and to colder districts. Professor Brewer found it on the summit of Monte Diablo, and it extends northward to British Columbia, and east to Montana, Utah and Arizona.

A number of people in Paso Robles who are fond of gardening have moved some hundreds of Lewisia-plants, while in full bloom, and set them out to form edgings. The Lewisia maintains its reputation of being exceedingly tenacious of life, and the large fusiform roots have gone on growing under a hot sun without seeming to suffer in any manner. I saw plants which bore twelve or fifteen large pale pink flowers apiece, and they form a very attractive border at this season. The small colony alluded to is already decimated for the use of such gardens, but the plant grows readily from seed, and is so hardy a perennial that the settlement, though only a few hundred feet across, will hardly be destroyed.

Berkeley, Calif. *Charles H. Shinn.*

Taxation for Municipal Improvements.

To the Editor of Garden and Forest:

Sir,—Your editorial of April 10th, on the proposed new system of parks for Essex County, alludes to a method of paying for such improvements which deserves more attention and stricter observance. You say "the valuations of property facing the new parks and parkways will be sure to advance sufficiently to more than pay for the improvement." Of course they will, and little reflection is needed to show that here is the natural fund which ought to be taken for every such improvement. That it is ample the history of all improvement abundantly testifies. But is it so taken? Consider what valuation increases with improvements of this kind. If I own a plot of unimproved property facing the park, valued at, say, $5,000, and my neighbor has a similar plot with $5,000 worth of improvements on it, it is manifest that, while he will have twice the amount of taxes to pay that I have, his property has increased no more in value than mine. His dwelling, fences, drains, etc., are not one whit more valuable because of the proximity of the park, but they are assessed as if they had an added value. Thus, even on the assumption that real estate is assessed at its true value, an inequality and injustice arises, which is added to by the fact that unimproved real estate is notoriously undervalued for purposes of taxation. Does not this go to show that in levying taxes for public parks and other such desirable improvements, the increased value of the land ought to be the basis of taxation, and improvements exempted? Any other system is, practically, a fine on the men who put their land to use. Your recommendations are in the line of sound public policy. You should go further and declare against a system of taxation which unduly burdens one class of property-owners for the benefit of another.

New York. *Luther G. Sand.*

[So complicated a problem as the adjustment of taxes for municipal improvements can hardly be settled offhand by looking at it from a single point of view. No doubt, the property which faces Central Park has increased in value since the park was planned by an amount equal to the original cost of the land condemned for the park. But, of course, these property-owners were not the only ones whose land was enhanced in value by the park. In the case of Essex County, the entire population voted for the parks. These will minister to the health and pleasure of all the people, and lands belonging to many of them will rise in value, even when it does not lie directly along the boundary of any new park. Almost every community has its own way of doing things, which depends partly on law, partly on precedent, and partly on tradition. A few years ago a wide parkway was built in a New Jersey city, which greatly increased the value of that portion of the city it traversed. All the land which was taken was valued by commissioners, and the owners of this land were paid what was considered its full value. In many cases, where a narrow margin was taken from a lot, it was naturally supposed that the remainder would be worth more when the road was built than the entire lot was originally; but the courts would not allow any deduction from the assessed damages to the land on account of this probable betterment, as it was held that no one knew how much the increased value would be, and it was unjust to tax values which only existed in the future.

As to the point of taxing the land only and not the improvements on the land, it may be said that in most cities where new streets are opened or sewers built taxes are levied by the front foot, without any regard to the value of the dwellings on the property. It may be worth while to note here that, in Baltimore, parks are paid for by taxing the gross receipts of street railways. From an article in *The Municipality and County* it appears that the greater proportion of the cities in the United States do not assess adjacent or abutting property for park purposes. Boston has an odd system of assessing lands about parks within distances varying from two hundred to six hundred feet. In Brooklyn, Prospect Park was made a charge against twelve wards, which composed the old city. Kansas City has a system of submitting to a jury the determination of what assessments against property adjacent to parks are equitable. St. Paul assesses sixty per cent. against adjacent property, the distances from the parks wherein such assessments are made depending on circumstances. In Denver there is an attempt to divide the city into park districts, each one of which shall be assessed for its own public grounds. Altogether, it looks improbable that any uniform system of levying taxes for park improvements can be expected in this country—for some time, at least.—Ed.]

Recent Publications.

How to Know the Wild Flowers. By Mrs. William Starr Dana. Illustrated by Marion Satterlee. Revised and enlarged edition. Charles Scribner & Sons.

The popularity of Mrs. Dana's book is proved by the fact that the demand for it has justified an edition which contains fifty per cent. more plates than the old one, so that in this volume a hundred and sixty-four of our wild flowers are figured, and new descriptions of flowers have been added until nearly five hundred flowers are now described. Of course, the disadvantages of a book like this for reference are evident. When a comparatively small number of flowers are selected for identification, among the great number of those omitted there are sure to be many about which the learner will find himself hungry for information. Plants so common as to be generally recognized, very rare plants and those with inconspicuous flowers, are among the classes that are rejected, but all these phrases are comparative. The well-known flowers of one locality may not be familiar in another, and the novice is quite likely at the outset to come upon a flower that has

been omitted as rare, although, of course, he cannot know this. In completeness the book is much inferior to such a manual as Gray's *Field, Forest and Garden Botany*, which includes all the ordinary cultivated plants as well as most of our native ones. If Mrs. Dana's book has any advantage over an ordinary manual of botany in enabling readers to identify wild flowers, this comes from the fact that in it the flowers are classified according to their colors; that is, rather more than a hundred pages are given to plants with white flowers, then seventy-five to those with yellow flowers, sixty to pink flowers, twenty to red flowers, sixty to blue and purple flowers and about a score more to flowers which are classified as miscellaneous. The flowers are arranged something in the order of their opening; that is, the earliest ones of each color are described first. Thus, when the student comes across a red flower in midsummer he has only to look in the list of that color among the flowers that bloom at that season, and if he finds the picture of it and the description he is made happy; if he misses them he wishes for better luck next time. One would hardly expect to make any great advance in knowledge by following this go-as-you-please plan, but we are assured that many people have carried this book into the country for a summer and have really discovered the names of a good many plants. Let us hope that many of these may be stimulated into something like a systematic observation of the vegetable life about them. If the book helps in any degree to encourage habits of observation, or if it leads to an unaffected admiration for the beauty of flowers and shrubs and trees it will be worth many times what it costs to any reader.

China Asters. Bulletin 90: Horticultural Department of Cornell University Experiment Station.

This compact little monograph is something of a novelty in the way of information from one of our agricultural experiment stations. In some prefatory remarks Professor Bailey discourages the habit of setting formal flower-beds in the midst of a lawn, because the flowers destroy the freedom and breadth of the lawn by cutting it into patches and by introducing brilliant colors and an appearance of activity and fidget where everything should be subdued, quiet and reposeful. At the same time a broad stretch of greensward about the bed is the worst possible setting if the flowers are to be seen to the best advantage. Professor Bailey advises having flowers in lavish supply, but in small places he would plant them as borders along a rear walk or against a building. He might have added that there were certain perennials, and even annuals, that can be sparingly planted among the shrubs that border a lawn, although a long, highly colored edging of flowers as the boundary of a lawn may do almost as much to disquiet it as a mass of Coleus set well within it. He might have added, too, that in large places flowers never look more beautiful than when hedged within some formal enclosure where the gardener can gratify his taste for geometry and have the great bulk of his flowering annuals and perennials massed, not only so that they can be more conveniently cared for, but so that they can be arranged to produce brilliant effects without distracting attention from scenery of a more placid character.

On account of their easy culture, freedom of bloom and variety of form and color, these China Asters are among the very best of annuals for popular use, and they have the advantage of being at their best in the late season when the greater part of the perennials are spent and they carry a profusion of bloom until winter sets in.

After a brief history of the evolution of the China Aster from the species Callistephus hortensis, or, as Professor Bailey prefers to call it, Callistemma hortense, the different classes are described with considerable detail. No effort at an exhaustive classification is attempted, for this is plainly impracticable. Vilmorin divides the varieties into the pyramidal growers and the non-pyramidal, but Professor Bailey suggests as a serviceable scheme a separation into two sections: those in which the florets are open or flat, and those in all but two or three of the outer rows of florets are tubular or quilled.

THE FLAT-RAYED SECTION.—This section may be divided into two classes: (1) Those with ball-shaped flowers, and (2) those with flat or recurved flowers. In the first class are included Truffaut's Pæony-flowered Asters, one of the oldest and best of the types, moderately tall and vigorous plants, somewhat pyramidal in habit, with small globular and nodding flowers in many colors. La Superbe is one of the best strains of this type. Semple's strain also belongs to the Globe class, so does the Jewell, a strain of rather dwarfer habit than the Semple and flowers less incurved than the Truffaut strain, with short petals and compact symmetrical heads. Triumph is another dwarf Globe-flowered Aster, but it does not seem to have been well fixed in habit as some of the flowers are Chrysanthemum-shaped.

The second or reflexed class of this section includes the so-called Chrysanthemum-flowered strain, the plants having various habits and various merits, and very useful in many colors. The Washington Aster is an offshoot from this strain, and so is the more refined Mignon, with plants of medium height, flowers more regular in shape than the Victorias, which are free-blooming and both tall and dwarf. The Emperor, in various colors, is a tall-growing, late-flowering strain; the plants branch sparingly and carry from three to five large Chrysanthemum-shaped flowers. Queen of the Market, and the varieties of this type called Queen of Spring and Queen of the Earliest, will bloom in August when the seed is sown out-of-doors. They have a free, widespreading habit, with long stems, which makes them useful for cutting. The Candelabra group is somewhat like this, but later. The Crown or Cocardeau strain is medium or semi-dwarf, flowering early and abundantly. The centre of the flower is white, surrounded by a fringe of various-colored rays, and the central florets are somewhat tubular, so as to suggest the quilled section, with which they are connected. The Comet is, perhaps, the best of this class, if not the best of all China Asters, with its loose open flowers and long strap-shaped rays. Its color was not quite satisfactory at first, since the pink-tinted florets faded out into a dingy white, but the rose-colored and blue-flowered kinds, which appeared later, were improvements, and the clear white one introduced in 1892 by Vilmorin is altogether satisfactory. Occasionally these Comet Asters sport into an inferior form with a loose border and an open centre. They are not so useful for cut flowers as some of the larger-stemmed and rounder-flowered types. Finally, there is the Imbricated type, sometimes known as Imbricated Pompon, which is intermediate between the flat-rayed and quilled section. The rays are approximately alike, short and rather concave, springing from a tubular base. The heads are medium or small in size, but close and uniform in shape. The plants are sometimes dwarf and sometimes tall, but the habit is always compact, and it is a distinct and desirable strain.

THE TUBULAR OR QUILLED SECTION.—This section is divided into (1) the Button-quilled and (2) the Long-quilled or Needle Asters. The first division, with inner florets short and outer ones longer and flat, is represented by the German quilled in many colors, sometimes with drooping flowers, but mostly with tall and branching growth on long stiff stems. Dwarf Bouquet also comes in many colors. This strain grows only six or eight inches high, with a terminal cluster of small dense heads, with the centre florets short and tubular and a thin fringe of flattish rays. These are good for borders for formal effects. Shakespeare is much like them, but the flowers are most distinctly quilled. The second division of this section, with all the florets elongated and quilled, is represented by the Victoria Needle type, which has no rays whatever, but all the range and brilliancy of coloring of the Victoria type and long quill-like florets. Lilliput is a late and pretty strain in many colors, with small flowers and slender compact quills and tall plants.

The bulletin concludes with a list of 250 varieties offered by American seedsmen this year, the trade names being given without any attempt to determine the synonyms. Very few cultural directions are given, because few are needed. Seeds can be sown indoors or in a frame as early as the middle of April in this latitude if plants are to be grown in pots as specimens for exhibition, but where they are to be grown in borders it is quite as well to sow the seed where the plants are to grow. Last year the seeds of fifty varieties were sown at the Cornell gardens on the 4th of June, in which, notwithstanding the prolonged drought, every variety gave a profuse bloom throughout September and October. Few insects prey upon these plants. Their most serious difficulty is the rust which attacks the underside of the leaf and raises an orange-colored pustule. Timely spraying with ammoniacal carbonate of copper will keep this disease in check. A nozzle should be used which can throw the spray upward so as to strike the underside of the leaf. The first application should be made before the fungus appears, and it should be repeated every week or ten days.

Notes.

Some of the florists' windows are now decorated with sprays of Purple Beech and Laburnum. The dark wine color and soft texture of the young Beech-leaves, the light green of the trifoliate leaves of the Laburnum, and the rich pure yellow of its long pendent racemes make a very pleasing combination.

A male plant of Nepenthes bicalcarata is now in flower at the Botanic Garden in Washington. In *The Gardeners' Chronicle*, last year, it was reported that the same thing had happened somewhere in England, and the flowers were arranged in the form of an umbel. The specimen in Washington shows a fasciated growth at the base of the spike, the remaining part being similar to the inflorescence of other Nepenthes.

A Washington correspondent writes of a specimen of Acer insigne, on a grassy slope facing to the west; it is thirty years old, only twenty feet high, and is a beautiful small tree with large handsome palmate leaves, which, during even the hottest summers, preserve their green color, owing, perhaps, to their leathery texture. This tree is a native of Persia, and commends itself to those who are looking for lawn-trees which will not attain a large size very quickly.

The rooms of the New York Flower Mission, at 104 East Twentieth Street, were opened last Thursday for the reception of flowers, fruit and delicacies for the sick. Fresh flowers with long stems, and carefully packed for transportation, may be sent on Mondays and Thursdays throughout the summer season. Packages not exceeding twenty pounds' weight are carried free of charge by the express companies, as we have explained in former years when noticing this interesting charity.

In a late report made to the Minnesota Horticultural Society, Mr. R. Knapheide, of St. Paul, recommended that the game wardens of the state be empowered to protect wild fruits, which he declares are in quite as great danger of extinction there as the wild game is. He stated that in order to secure grapes, for example, reckless pickers cut the vines off and tore down the entire plant, so that if the practice continues many kinds of wild grapes and other fruits will be totally annihilated in a few years.

Professor Foster, the well-known authority on Irises, has raised a hybrid from seed out of I. paradoxa, fertilized by I. Korolkowi, the seed parent belonging to the Oncocyclus section, and the pollen parent to the Regelia section. The flowers are described as very beautiful in *The Gardeners' Chronicle*, the prevailing tint of the falls being a rich brownish purple, almost black, with purple veins on a translucent pale violet ground, while the standards are thinner, with radiating veins on a violet ground, and, altogether, it seems to be an interesting addition to the class of bearded Irises.

Large plants of tender and crisp-looking Romaine lettuce, started under glass and grown out-of-doors on Long Island, now sell for ten cents each. Mushrooms, which cost $1.50 a pound during the recent period of cold weather, when their growth was checked, are quite plentiful since the warm days of last week, and bring seventy-five cents a pound. Florida tomatoes cost thirty cents a pound, and the more solid product of greenhouses, fifty cents. Of southern vegetables alone very nearly 100,000 packages were unloaded on the railroad and steamship docks of Jersey City and New York during last week.

The current number of *The Garden* contains a colored plate of Acidanthera bicolor, an Abyssinian plant of the Iris family, which ought to be more generally known. As long ago as 1888 we published a figure of this plant by Mr. Faxon, a reproduction of a photograph, showing its appearance when several of the bulbs were planted and grown in a tub, and some interesting details as to its cultivation by Mr. Endicott. The plant is nearly allied to Gladiolus, and can be treated like tender species of that genus, although it likes a stiffer soil. The plants that were grown in a tub flowered in October after frost had destroyed the out-of-door garden, and at this season their fragrant and pendulous flowers of creamy white, with chocolate-brown blotches, are very effective for decorating conservatories and living-rooms. When the bulbs are planted early the plants will flower in a border in late summer, but the flowering-time can be easily retarded by planting the bulbs late.

Mr. George H. Englehart, well known as an expert in raising Narcissi, writes to *The Gardeners' Chronicle* that the plant known as Narcissus triandrus pulchellus is really a natural hybrid between N. triandrus and N. jonquilla. The flower of this plant appeared to Mr. Englehart to have a perceptible Jonquil scent and it was sterile, and from this and other reasons he inferred that it was a hybrid, and, therefore, some ten years ago he began to fertilize N. triandrus with pollen from the Jonquil. The seedlings, however, all died before flowering, until this year some have bloomed, and the artificially bred flowers seem to have all the characters of N. triandrus pulchellus, with the corona whiter than the perianth and the true Jonquil scent; the leaf-character and all the other features of the variety pulchellus are also present. Mr. Baker, in commenting on this specimen, seems to endorse the view of Mr. Englehart, that the plant we have known as a variety of N. triandrus is probably a hybrid between that plant and some of the Spanish or Portuguese forms of N. jonquilla.

Experiments on a considerable scale were made last year in Orange County, Florida, in cultivating Castor-beans as a commercial crop. The planting was deferred until May, so that the plants had only begun to ripen seed in quantity when the frost came and destroyed them. About 350 bushels of beans were gathered in two cuttings, and the experimenter has reason to believe that if he had planted in February a longer season and greater growth would have given a thousand bushels more before the cold killed the plants, since there were from three to five heads on each stalk which were too green to be of any value when the frost came. Of course, last season was specially unfavorable, and for ten years past Castor-oil plants have lived through the winter and begun to form new heads and ripen seeds early in spring, and it is thought that in the so-called Orange belt plants will go through the winter, as a rule, and bear seed for ten or twelve months. It often occurs that plants live five or six winters, and become real trees before there is frost enough to kill them. The experimenter does not seem to be disheartened, and the tract has been replanted with beans for this year.

Nearly 50,000 crates of strawberries reached this city during last week from North Carolina, the eastern shore of Virginia, Maryland and Delaware. The heaviest supply came on Wednesday, and 15,500 crates were put on the market. Until the latter part of the week, when heavy rains caused the berries to come wet and sandy, they arrived firm and well ripened, though large berries of choice or extra quality have been scarce. Prices at retail range from ten to thirty cents a quart box. The first blackberries of the season seen here, from Georgia, are small and seedy and sell for fifteen cents a quart, and green gooseberries, from Maryland, bring the same moderate price. The only pears now found in the markets are P. Barrys, from California. This variety is successfully carried over in cold storage until nearly midsummer. They are now at their best, the white juicy flesh having a sweet, slightly vinous flavor; they cost $1.25 to $1.50 a dozen. Newtown Pippins, the last of the season, cost fifty to seventy-five cents a dozen, and the same price is asked for the few remaining Northern Spies, while Roxbury and Golden Russets bring thirty to fifty cents, and the few choice Baldwins command fancy prices. New California apricots, in five-pound boxes, not fully mature and far from luscious, bring $1.75, and Black Tartarian cherries cost twenty-five to forty cents a pound. Florida garden-grown pineapples of the largest size, from the keys, bring $1.50 each. Jamaica limes, small and green, in which state they are preferred for use in fancy drinks, are offered at twenty-five cents a dozen. The sales of fresh tamarinds, from the West Indies, have greatly increased this year. Besides the general cooling qualities for which the pulp covering the seeds is popularly recommended, the fruit is credited with curative action in some forms of sore throat. Their grateful sourness is due to citric and other vegetable acids. Mangoes, from the same islands, sell at the rate of $1.50 a dozen. Their aromatic fragrance when fully ripe is to most persons a higher recommendation than their stringy and rather insipid flesh, as we get them, but probably very little fruit of choice varieties ever reaches northern markets. The large supply of bananas, with the abundance of other fruits, has caused a drop in the extreme prices of a fortnight ago, and while a few red bananas of choice quality and large size bring seventy-five a dozen in the high-class fruit-stores, good yellow fruit costs only from fifteen to twenty-five cents a dozen. The last Almeria grapes sell for fifty cents a pound, and selected clusters of Black Hamburgs, from Rhode Island hot-houses, command from $2.00 to $3.00 a pound. Some idea of the immense quantity of fruit handled in New York city may be had from the wholesale auction sales of one day last week, when 25,000 boxes of lemons were bought by retail dealers, besides 15,500 boxes of Mediterranean oranges, 400 barrels of Jamaica oranges, four car-loads of California oranges, 55,500 bunches of bananas, 8,000 dozens of Bahama pineapples and 600 crates of the same fruit from Cuba.